WAT-910HX

OSD USER MANUAL

Rev. 1.00

Watec Co., Ltd.

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Change History

Rev. No.	Date	Changes	Remarks
1.00	2013.01.23		Initial Release

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1.Introduction

・The WAT-910HX user manual describes the functions and the adjustment method using the On Screen Display (OSD).

・When the settings of the WAT-910HX are changed according to the WAT-910HX user manual, check to see that the operation and the effects of the changes made to the camera are acceptable.

・The WAT-910HX user manual is subject to change by design and the specifications of the product without notice.

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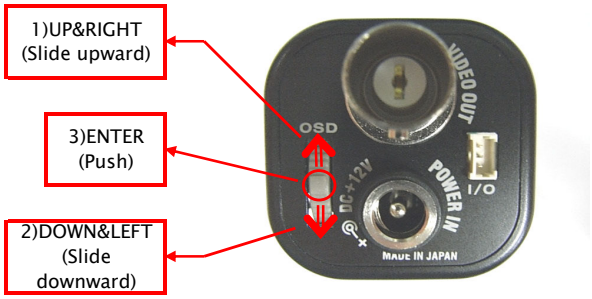
2.OSD MENU OPERATION

The functions and parameter settings of WAT-910HX can be changed by OSD(On Screen Display).
When operating OSD, Jog Switch is used.
See the picuture below for the detailed function of 3 keys.

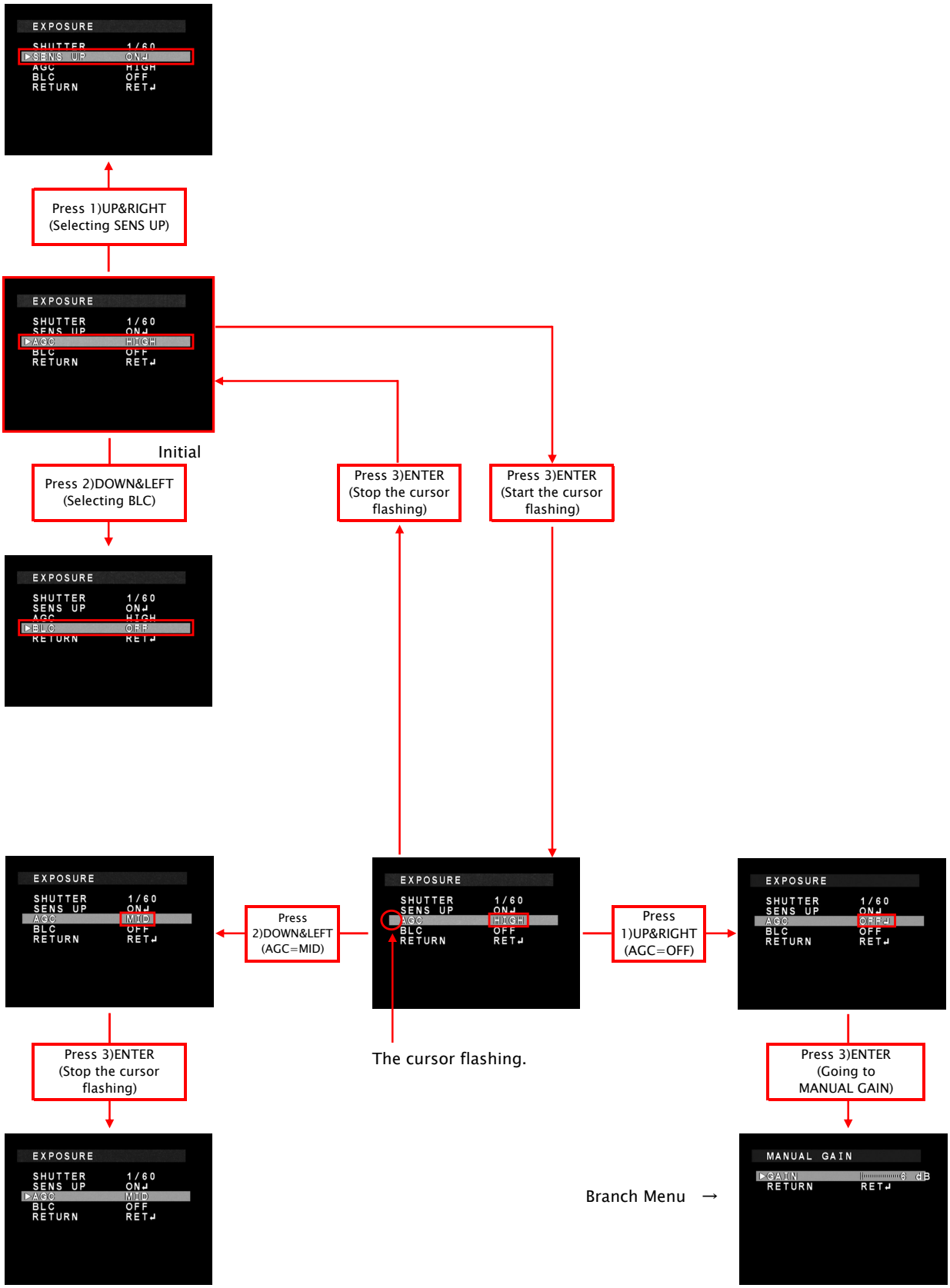


The operation portion of the Jog Switch

When using 1)UP&RIGHT/2)DOWN&LEFT, slide 1)UP&RIGHT/2)DOWN&LEFT button upward/downward.
1)UP&RIGHT : There are mainly two functions. One is to move the cursor upward on OSD Menu, and the other is to adjust and change the functions on each list (defined as rightward direction).
2)DOWN&LEFT : There are mainly two functions. One is to move the cursor downward on OSD Menu, and the other is to adjust and change the functions on each list (defined as leftward direction).
3)ENTER : Mainly to execute/set the selected list and function on OSD Menu.

Typically, 1)UP&RIGHT/2)DOWN&LEFT function work as up-and-down movement. Other than that, when pressing 3)ENTER on one of the lists, the cursor will start to blink, then, the buttons' functions changes to right-and-left movement.
When pressing 3)ENTER again under the above condition, the cursor will stop blinking. Then, the buttons' functions return to work as up-and-down movement.
The symbol "↲" will be on some lists on OSD Menu to indicate that there are Sub Menus or selectable options by pressing 3)ENTER.

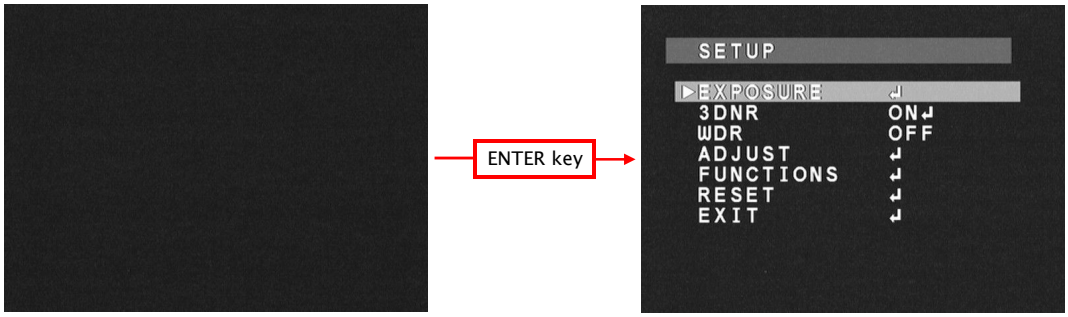
Please refer to the following model operation pictures on the basic Jog Switch usage.
AGC is highlighted in the second picture from the top, and these pictures explain what happens when 3 buttons are controlled.



From the next page, each button is written as follows.
1)UP&RIGHT is written as "UP key", and 2)DOWN&LEFT is written as "DOWN key".
(When the keys are used for up-and-down movement.)
In addition, 1)UP&RIGHT is written as "RIGHT key", and 2)DOWN&LEFT is written as "LEFT key".
(When the keys are used for right-and-left movement.)
3)ENTER is written as "ENTER key".

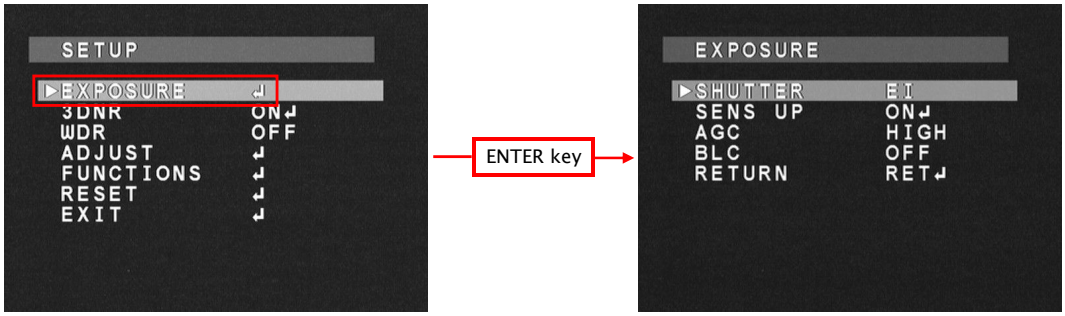
3.SETUP MENU(TOP MENU)

When pressing ENTER key, SETUP menu will appear on the screen.



3.1 EXPOSURE MENU

When adjusting EXPOSURE settings, move the cursor to EXPOSURE and press ENTER key.
Press UP/DOWN button to choose one of the items in EXPOSURE, press the ENTER key to select, and change it with LEFT/RIGHT key. Press the ENTER key to set.



3.1.1 SHUTTER

Select Shutter Speed(or Shutter Mode) with LEFT/RIGHT key.

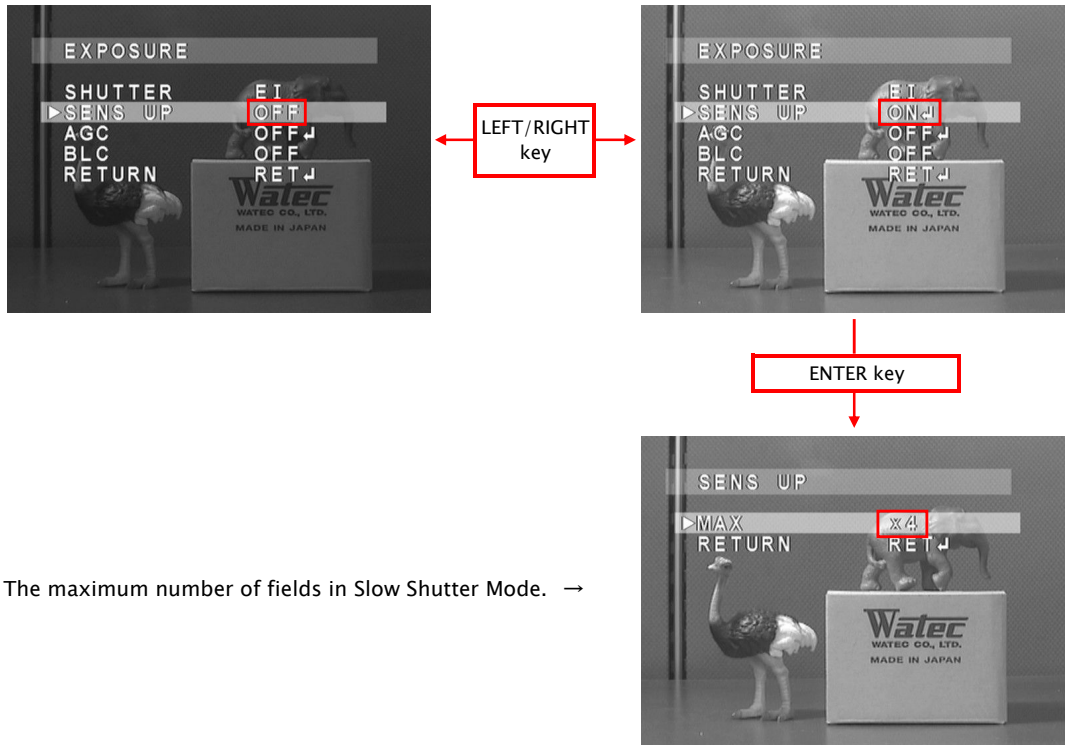
The default setting is EI.

Shutter Speed	Shutter Mode	Details
x256	Slow speed shutter (fixed shutter speed)	Selected number of fields x 1/60s(EIA)or1/50s(CCIR) will be the calculated fixed shutter speed in seconds.
x128		
x64		
x32		
x16		
x8		
x4		
x2		
EI	Electronic iris	It is the function which adjusts the shutter speed from the slow shutter speed (selected with the SENS UP menu) to 1/100000(sec), which depends on brightness of a camera object, and maintains a proper exposure state.
*1/60(1/50)	High speed shutter (fixed shutter speed)	The High speed shutter is defined as the selected Shutter Speed. FL is the abbreviation of FLICKER-LESS(1/100(sec):EIA or 1/120(sec):CCIR). Note. Only when selecting 1/60(1/50) Shutter Speed, the EI range is from the selected slow shutter speed in the SENS UP setting, up to 1/60(1/50), and the EI can maintain a proper exposure of a camera object within this range.
FL		
1/250		
1/500		
1/1000		
1/2000		
1/5000		
1/10000		
1/100000		

* 1/60(sec):EIA, 1/50(sec):CCIR

3.1.2 SENS UP

When selecting EI(electronic iris) or 1/60(1/50) in SHUTTER, Slow speed shutter can be used to adjust exposure. Use LEFT/RIGHT key to select ON/OFF. When pressing ENTER key after selecting ON, the maximum number of fields under the SENS UP operation can be selected.
The default setting is x4.



The maximum number of fields in Slow Shutter Mode. →

Shutter Mode	SENS UP	Details
EI	OFF	Electronic Iris mode. (from 1/60(1/50)(sec) to 1/100000(sec))
	ON	Electronic Iris with slow shutter speed mode. (from SENS UP(number of fields) to 1/100000(sec)) The slow shutter speed can be selected from; x2/x4/x8/x16/x32/ x64/x128/x256. Use LEFT/RIGHT key to set the value.
EIA:1/60 CCIR:1/50	OFF	Fixed shutter speed mode(1/60(1/50)(sec))
	ON	Electronic Iris using slow shutter speed mode from SENS UP(number of fields) to 1/60s(1/50s). The slow shutter speed can be selected from; x2/x4/x8/x16/x32/ x64/x128/x256. Use LEFT/RIGHT key to set the value.
(other)	OFF	Fixed shutter speed mode.(selected in SHUTTER)

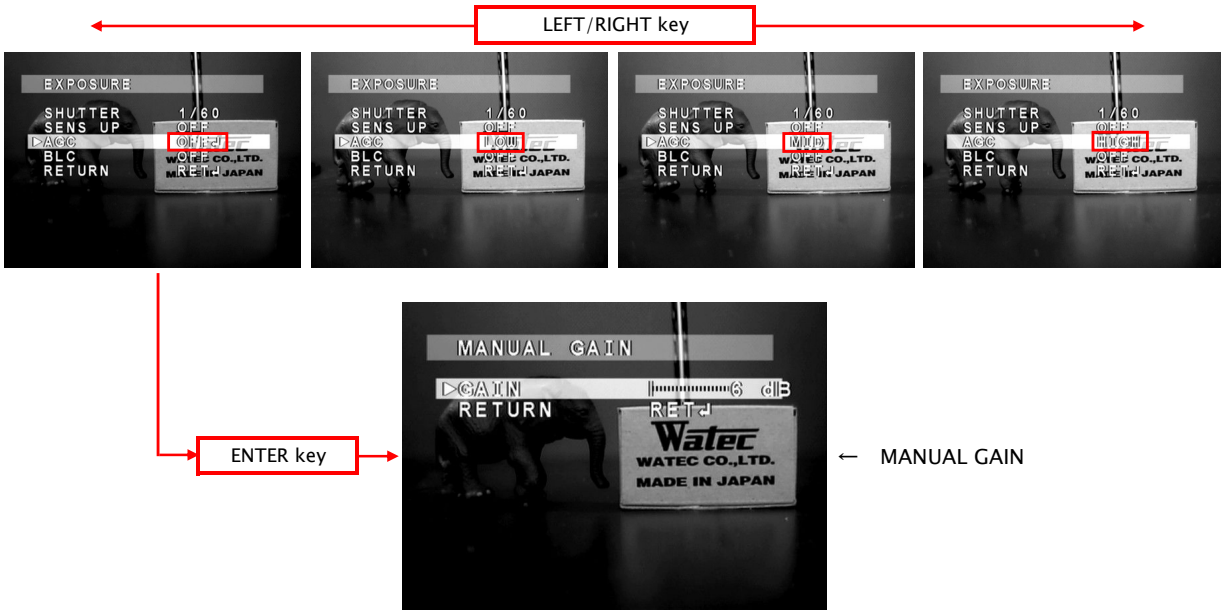
3.1.3 AGC

AGC Value can be changed.

Use LEFT/RIGHT key to setup AGC Value. During selecting OFF, when pressing ENTER key, SUB MENU for MANUAL GAIN Settings appears.

The default setting is HIGH. When selecting OFF, AGC is fixed to 6dB as default.

AGC Mode	(Sub Menu)	Details
OFF	GAIN	A fixed AGC level can be set. It can range from approx. 6 to 41(dB) Use LEFT/RIGHT key to change the AGC level.
	RETURN	Use LEFT/RIGHT key to show RET/END. Pressing ENTER key on RET, returns to EXPOSURE Settings. Pressing ENTER key on END, OSD menu turns off and SETUP is finished.
LOW	—	Gain range : approx. (min.)6 to (max.)30(dB)
MID	—	Gain range : approx. (min.)6 to (max.)34.5(dB)
HIGH	—	Gain range : approx. (min.)6 to (max.)41(dB)



3.1.4 BLC

Select Backlight operation on the menu. Traditional Backlight Compensation(BLC) mode and High Light Suppress Backlight(HSBLC) mode can be selected.

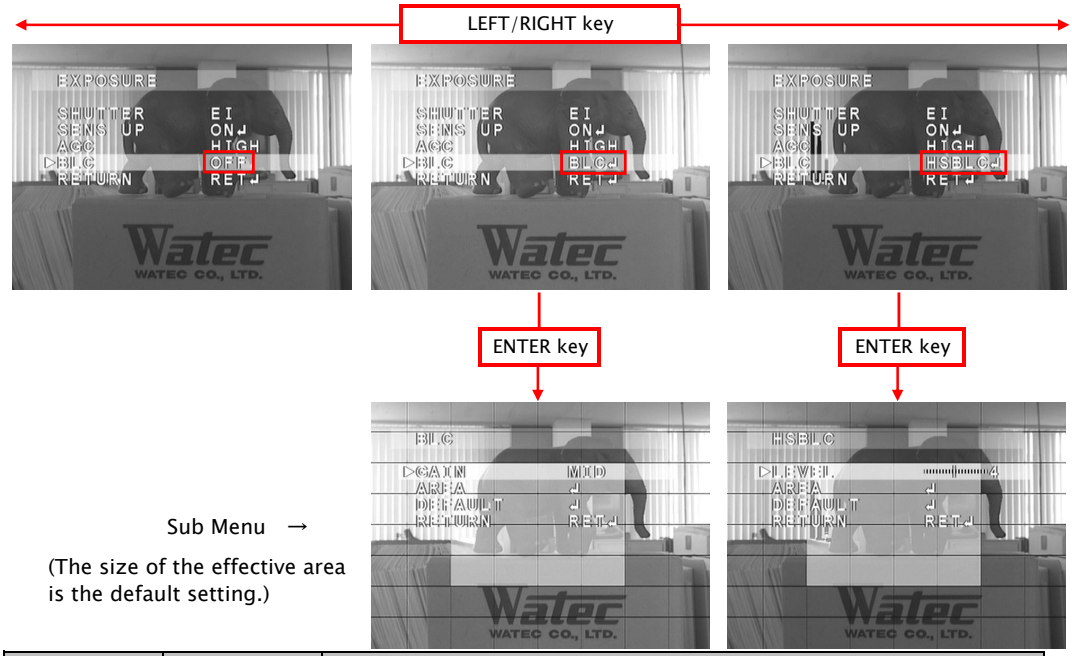
Use LEFT/RIGHT key to select OFF/BLC/HSBLC. When BLC/HSBLC is selected, press ENTER to show Sub Menu.

The default setting of BLC is OFF. When selecting BLC, the default GAIN is MID. When selecting HSBLC, the default level of HSBLC is 4. The area default of BLC HSBLC is as follows.

Note. BLC/HSBLC does not work under the condition below.

SHUTTER is fixed shutter speed mode & SENS UP is OFF & AGC is OFF

However, when selecting HSBLC, the high lighting area is masked.



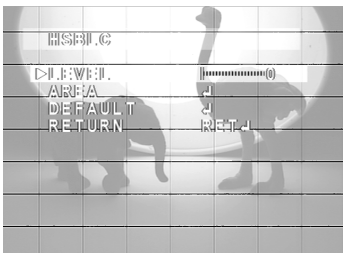
Sub Menu →

(The size of the effective area is the default setting.)

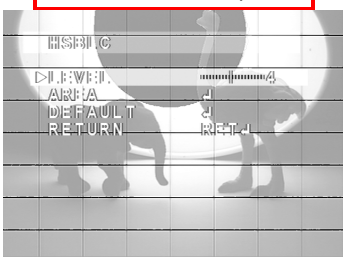
BLC Mode	(Sub Menu)	Details
OFF	–	The BLC function is OFF.
BLC	GAIN	Change the level of BLC effect with LEFT/RIGHT button. LOW / MID / HIGH Use LEFT/RIGHT key to select GAIN.
	AREA	Press the ENTER key to position and set the size of the BLC area window[2].
	DEFAULT	Return the setting to default when pressing the ENTER key. If selecting DEFAULT, changed GAIN/AREA will return to the initial setting.
	RETURN	Use LEFT/RIGHT key to show RET/END. Pressing ENTER key on RET, returns to EXPOSURE Settings. Pressing ENTER key on END, OSD menu turns off and SETUP is finished.
HSBLC	LEVEL	Defining the brightness level of the high lighting area[1] to be covered by a mask. 0(only high brightness area) – 8(high and low brightness area) Use LEFT/RIGHT key to change the level.
	AREA	Press the ENTER key to position and set the size of the BLC area window[2].
	DEFAULT	Return the setting to default when pressing ENTER key. If selecting DEFAULT, changed LEVEL/AREA will return to the initial setting.
	RETURN	Use LEFT/RIGHT key to show RET/END. Pressing ENTER key on RET, returns to EXPOSURE Settings. Pressing ENTER key on END, OSD menu turns off and SETUP is finished.

[1] How HSBLC effects on image when changing LEVEL

LEFT/RIGHT key



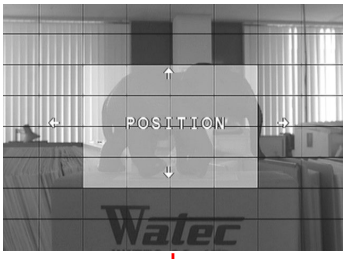
LEVEL=0



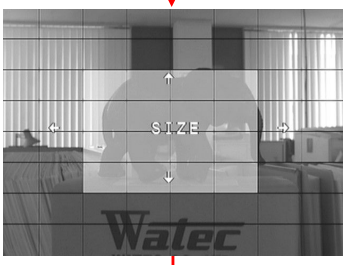
LEVEL=4

LEVEL=8

[2] How to set up the BLC/HSBLC area

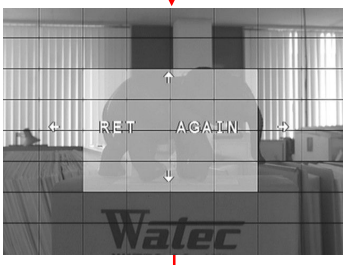


ENTER key



When pressing ENTER key on AGAIN, returning to POSITION Setting.

ENTER key



When pressing ENTER key on RET, returning to BLC/HSBLC Menu.

(1)POSITION Setting

The position of the effective BLC/HSBLC area can be set on this Setting.

The horizontal position of the effective BLC/HSBLC area can be moved by pressing UP&RIGHT/DOWN&LEFT key.

After pressing ENTER key, adjusting the vertical position can be conducted in same way as the horizontal position adjustment. The size can be set after the position is set by pressing the ENTER key.

*HINT: When positioning the window, align the top left corner to the desired window position's top left corner, as the SIZE Setting references this corner.

(2)SIZE Setting

The size of the effective BLC/HSBLC area can be adjusted on this setting.

Use UP&RIGHT/DOWN&LEFT key to adjust the horizontal size. After the adjustment, press ENTER key. Use the same key to adjust the vertical size.

When finishing the size adjustment, press ENTER key.

(3)RET/AGAIN Setting

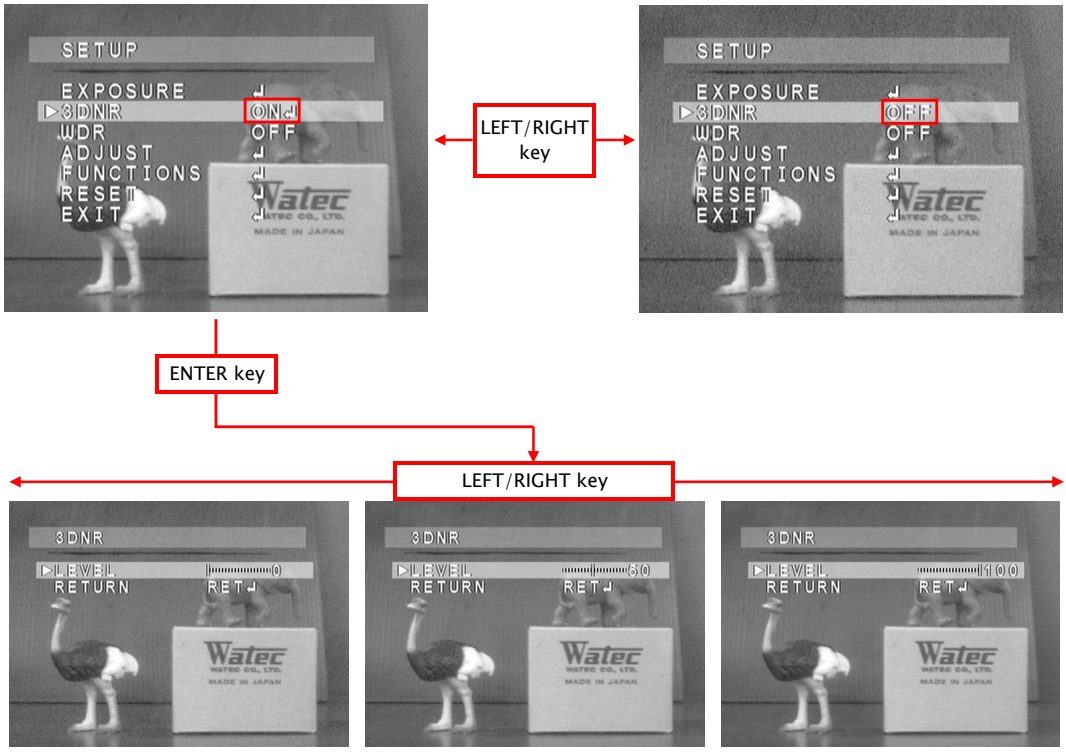
Use UP&RIGHT/DOWN&LEFT key to select RET/AGAIN.

3.2 3DNR MENU

Three-dimensional noise reduction(3DNR) can be set on this menu.

Use LEFT/RIGHT key to select ON/OFF. When ON is selected, press ENTER key to show Sub Menu.

The default setting is ON, and the default level is 50.



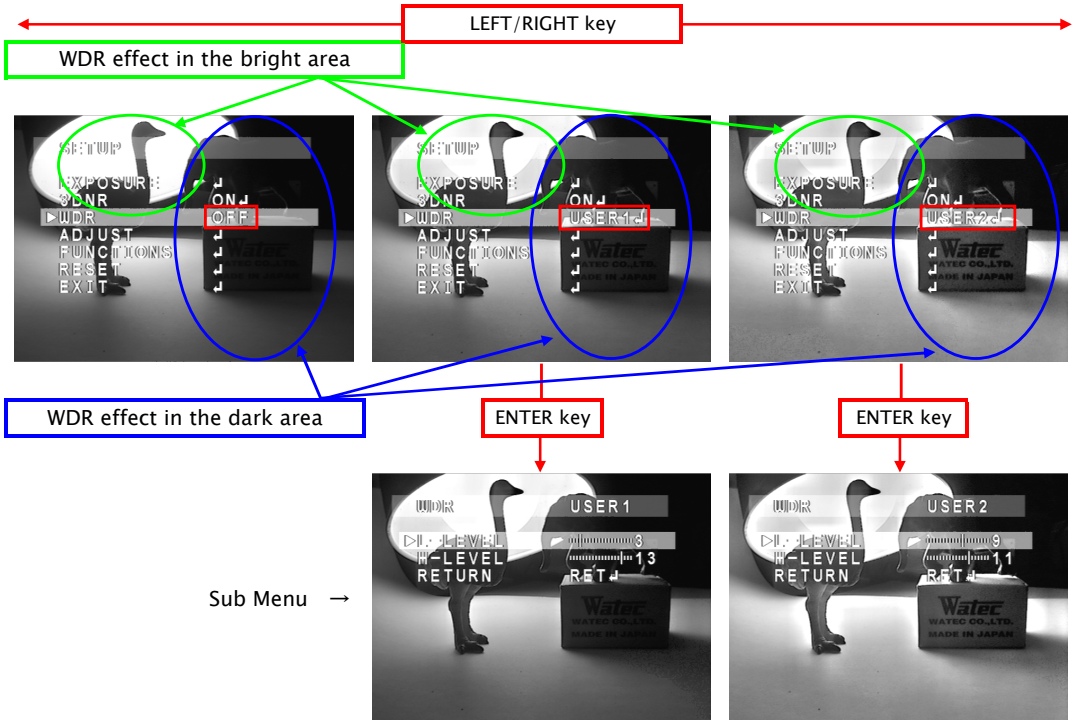
LEVEL=0 LEVEL=50 LEVEL=100

3DNR Mode	(Sub Menu)	Details
OFF	—	3DNR is OFF.
ON	LEVEL	Level of the 3DNR. From 0(weak) to 100(strong) Use LEFT/RIGHT key to change the level.
	RETURN	Use LEFT/RIGHT key to show RET/END. Pressing ENTER key on RET, returns to SETUP screen. Pressing ENTER key on END, OSD menu turns off and SETUP is finished.

Note. Setting the larger value of the 3DNR LEVEL means that random noise is reduced more effectively, however, moving object resolution may be reduced, and/or fixed pattern noises may increase.

3.3 WDR MENU

The dynamic range of dark and/or bright part is expanded by digital processing.
Select WDR function OFF/USER1/USER2 with LEFT/RIGHT key.
When USER1/USER2 is selected, press ENTER key to show Sub Menu.
The default setting is OFF. The default setting of USER1/USER2 for dark part is 3(USRE1)/9(USER2). The default setting for bright part is 13(USER1)/11(USER2).



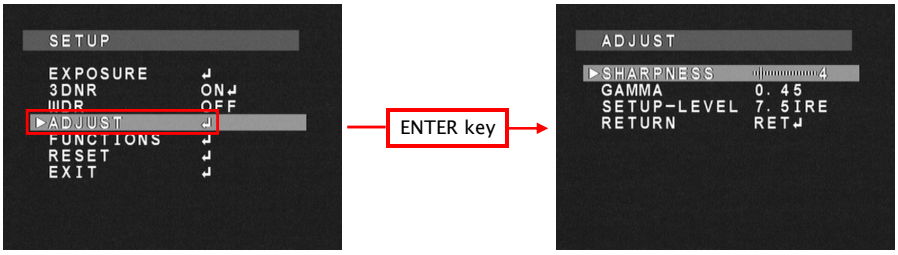
WDR Mode	(Sub Menu)	Details
OFF	—	Dynamic range expanding function is OFF.
USER1 / USER2	L-LEVEL	(L-LEVEL) Expanding level of the dark part. From 0(weak) to 15(strong) (larger value means more effective) Use LEFT/RIGHT key to change the level.
	H-LEVEL	(H-LEVEL) Expanding level of the bright part. From 0(strong) to 15(weak) (smaller value means more effective) Use LEFT/RIGHT key to change the level.
	RETURN	Use LEFT/RIGHT key to show RET/END. Pressing ENTER key on RET, returns to SETUP screen. Pressing ENTER key on END, OSD menu turns off and SETUP is finished.

Note. There is no difference with WDR function between USER1 and USER2.

3.4 ADJUST MENU

Use this setting to adjust the image quality.

Select ADJUST and press ENTER key to show Adjust menu. Use UP/DOWN key to select one of the lists on the menu, and use LEFT/RIGHT key to adjust.

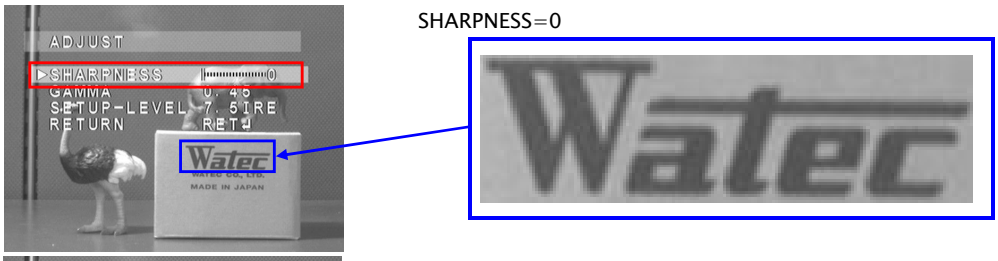


3.4.1 SHARPNESS

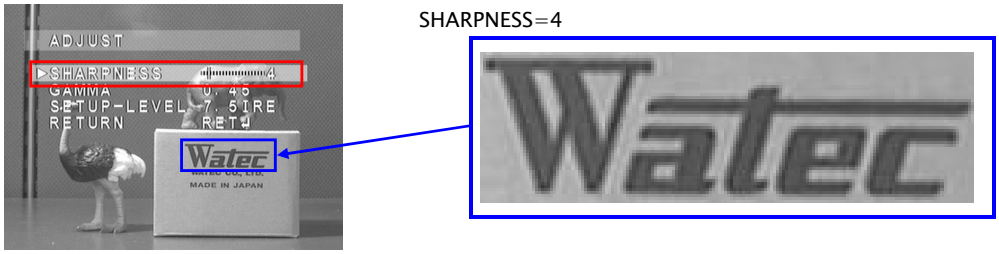
By using LEFT/RIGHT buttons, SHARPNESS(edge enhancement) adjustment is available.

The default setting is 4.

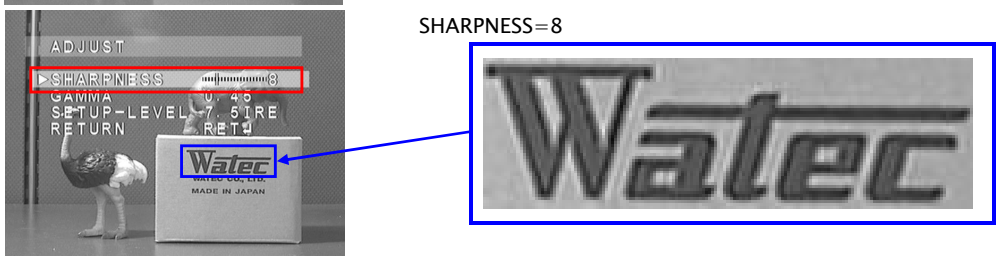
SHARPNESS=0



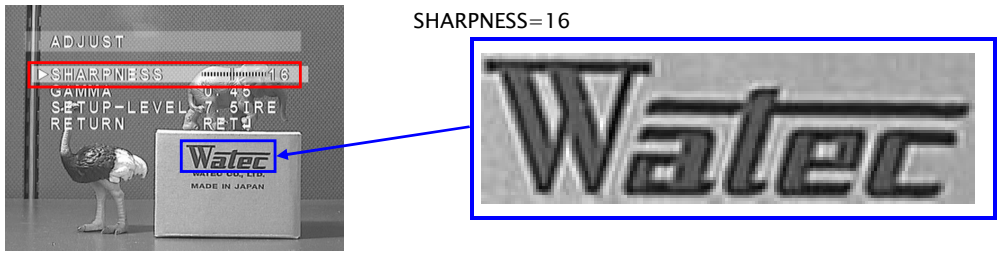
SHARPNESS=4



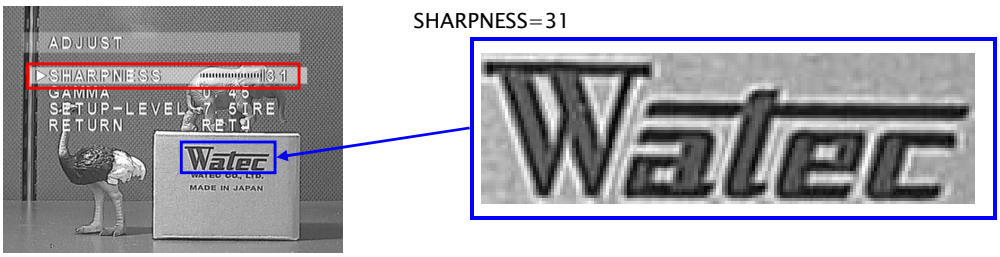
SHARPNESS=8



SHARPNESS=16

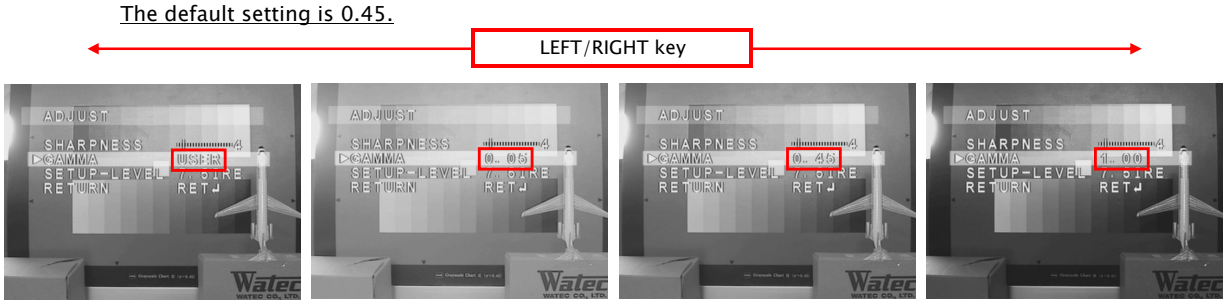


SHARPNESS=31



3.4.2 GAMMA

GAMMA characteristic is adjustable from USER[3], 0.05 to 1.0 (0.05 steps).
Use LEFT/RIGHT key to adjust GAMMA.
The default setting is 0.45.

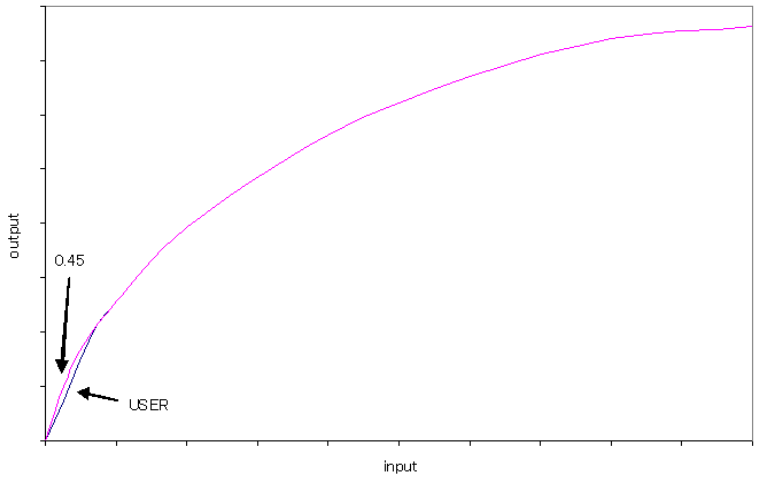


GAMMA=USER GAMMA=0.05 GAMMA=0.45 GAMMA=1.00

Please select a proper gamma value to match a monitor's characteristics. Generally, a dark part in a video frame becomes bright when gamma value is small. However, increases in appearances of "white outs" and noises may occur.

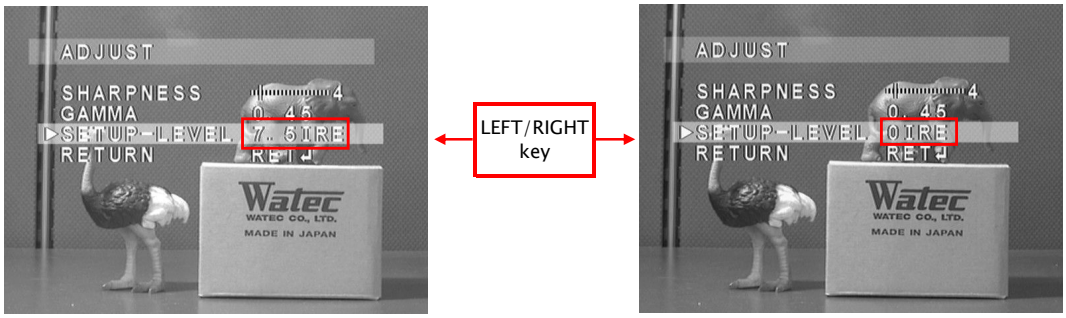
[3] The characteristic of USER mode

USER mode is a gamma curve of 0.45 which has improved S/N in dark parts of the image. (However, the VIDEO output of dark parts in USER mode becomes lower than in 0.45.)
The figure of gamma characteristics is as follows.



3.4.3 SETUP-LEVEL

Only 0IRE/7.5IRE can be set.
Use LEFT/RIGHT key to set the level.
The default setting is 7.5IRE.



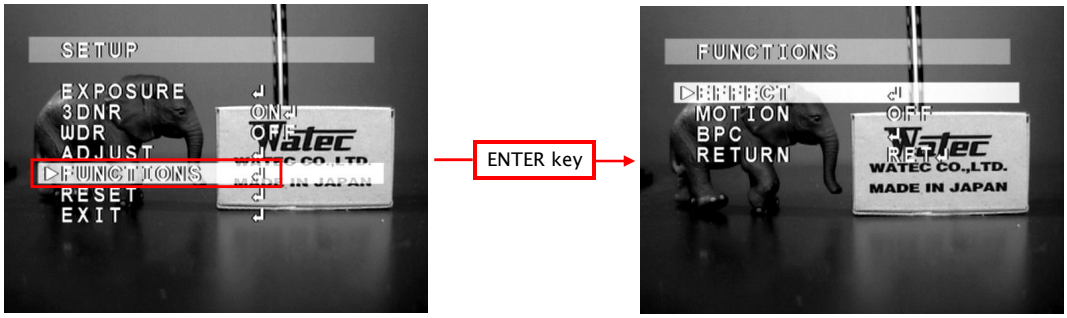
Note. SETUP-LEVEL is available to EIA only. There is no menu available to CCIR.

3.5 FUNCTIONS MENU

The digital image adjustment can be set.

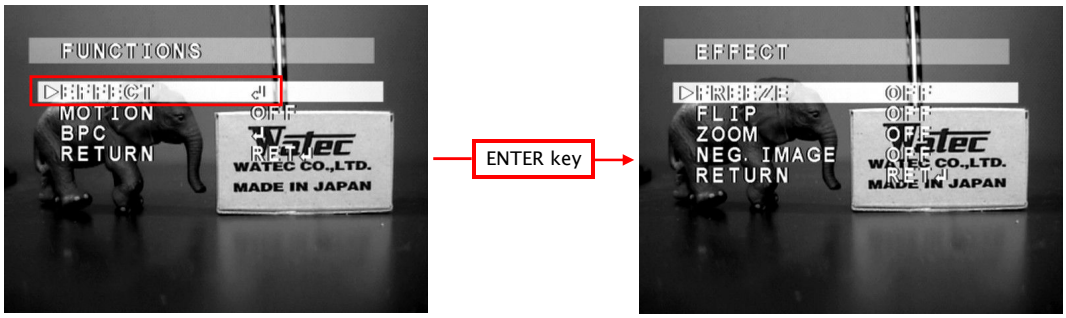
When pressing ENTER key on FUNCTIONS, FUNCTIONS menu will appear. Use UP/DOWN key to select one of the lists on the menu and press ENTER key. After that, Sub menu related to digital image adjustment will appear.

In selecting MOTION, use LEFT/RIGHT key to select ON/OFF.



3.5.1 EFFECT

When pressing ENTER key on EFFECT, the list of digital image adjustment will appear.



3.5.1.1 FREEZE

Select ON/OFF state by using LEFT/RIGHT buttons.

When the FREEZE function is turned ON, the video output signal will be a repeat of the same frame picture.

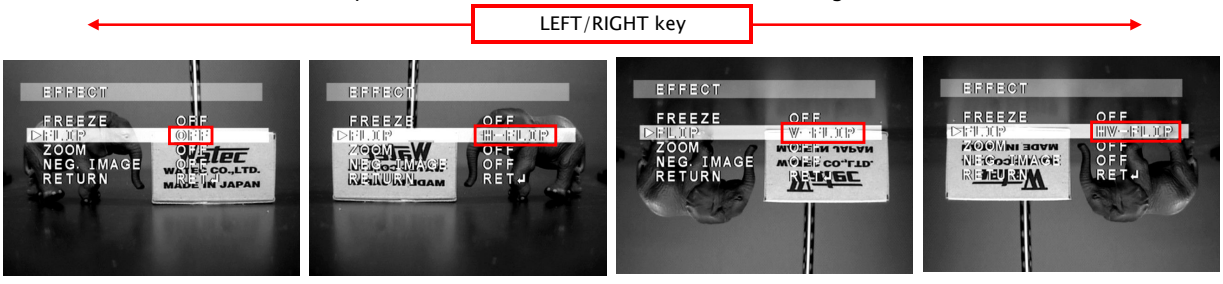
The default setting is OFF.

3.5.1.2 FLIP

OFF(normal image), H-FLIP(horizontal flip), V-FLIP(vertical flip)

and HV-FLIP(horizontal and vertical flip) are available.

Use LEFT/RIGHT key to select one of the effects. The default setting is OFF.



(1) OFF

Normal Image

(2) H-FLIP

Horizontal Flip

For example, a back monitor on automobiles is a possible application.

(3) V-FLIP

Vertical Flip

(4) HV-FLIP

Horizontal and Vertical Flip

Rotating the image by 180 degrees.

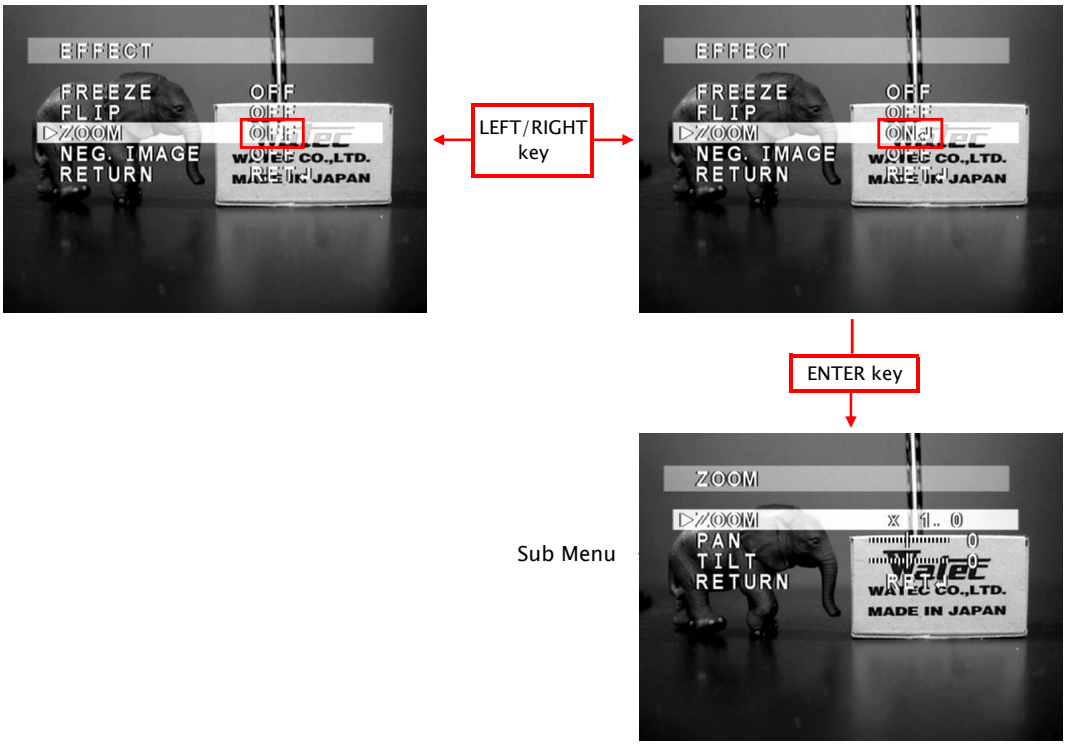
3.5.1.3 ZOOM

Digital zoom function is available.

Use LEFT/RIGHT key to select ON/OFF. When pressing ENTER key on ON, Sub Menu will appear.

The default setting is OFF.

When selecting ON, x1.0 is the default value of the magnification, and 0 is the default value of PAN and TILT.



Sub Menu

ZOOM	(SUB MENU)	Details
OFF	—	Normal image(digital zoom OFF)
ON	ZOOM	Set up the magnification of digital zoom. The magnification ranges from x1.0 to x32.0.[4] By using LEFT/RIGHT buttons,it can be set to a maximum magnification of 32 times.
	PAN	Horizontal PAN position is specified (invalid when ZOOM is set to x1.0 magnification). From -100(LEFT) to 100(RIGHT) (0 is center position) Use LEFT/RIGHT key to set the imaging position.
	TILT	Vertical TILT position is specified (invalid when ZOOM is set to x1.0 magnification). From -100(UP) to 100(DOWN) (0 is center position) Use LEFT/RIGHT key to set the imaging position.
	RETURN	Use LEFT/RIGHT key to show RET/END. Pressing ENTER key on RET, returns to FUNCTIONS Settings. Pressing ENTER key on END, OSD menu turns off and SETUP is finished.

[4] Magnification Steps

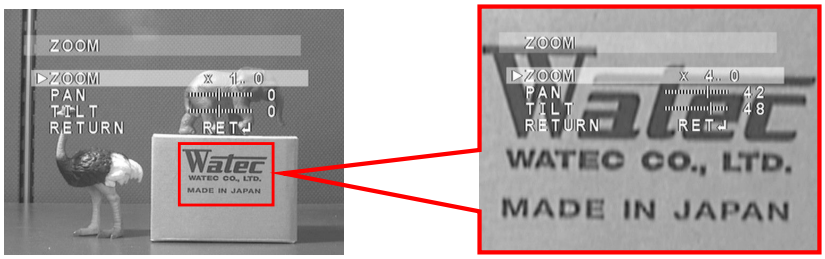
x1.0 to x4.0 : x0.1steps

x4.0 to x8.0 : x0.5steps

x8.0 to x16.0 : x1.0steps

x16.0 to x32.0 : x2.0steps

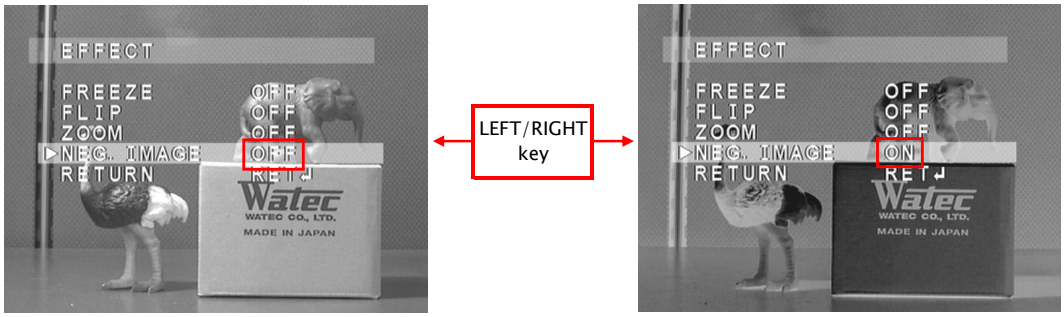
Example



3.5.1.4 NEG.IMAGE

Select Negative image (NEG.IMAGE) function ON/OFF with LEFT/RIGHT key.

The default setting is OFF.

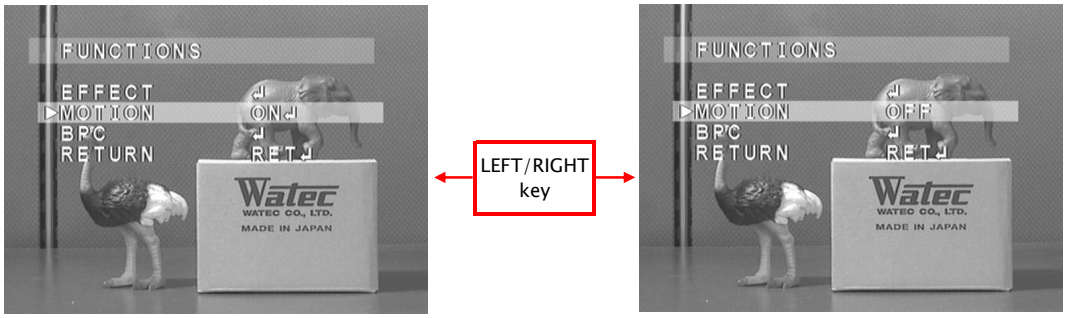


3.5.2 MOTION

Motion detection can be set.

Use LEFT/RIGHT key to select ON/OFF. When pressing ENTER key on ON, Sub Menu will appear.

The default setting is OFF. When MOTION is turned ON, AREA SELECT is AREA1, AREA DISPLAY is ON (AREA DISPLAY for AREA2-4 is OFF by default), default SENSITIVITY is 40. The other areas can be selected as below.

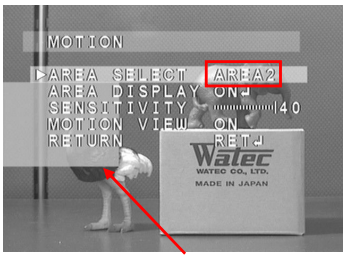


ENTER key

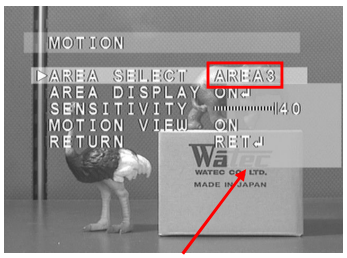
Sub Menu →

(The size of the effective area is the default setting.)

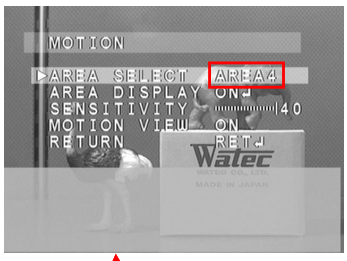
AREA1



AREA2



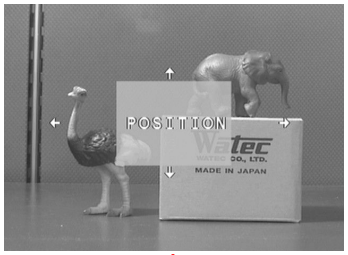
AREA3



AREA4

MOTION	(Sub Menu)	Details
OFF	—	Motion detection is OFF.
ON	AREA SELECT	The present detection area can be selected. Select the area from Area1 to Area4.Use LEFT/RIGHT key to select the area.
	AREA DISPLAY	The area presently selected can be shown with ON, or not shown with OFF. Use LEFT/RIGHT key to select ON/OFF. Pressing ENTER key on ON, will proceed to Motion Detection area window position and size setting[5].
	SENSITIVITY	Detection sensitivity can be adjusted. It ranges from 0 to 40. Use LEFT/RIGHT key to set the sensitivity.
	MOTION VIEW	MOTION VIEW can be set. Use LEFT/RIGHT key to set ON/OFF.
	RETURN	Use LEFT/RIGHT key to show RET/END. Pressing ENTER key on RET, return to FUNCTIONS Settings. Pressing ENTER key on END, OSD menu turns off and SETUP is finished.

[5] How to set the Motion Areas

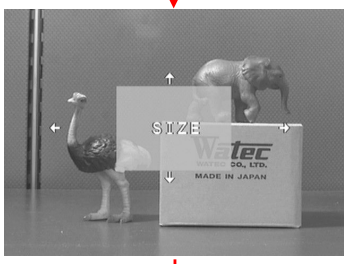


(1)POSITION Setting

The position of the effective motion area can be set. Use UP&RIGHT/DOWN&LEFT key to set the horizontal position of one of the 4 detection areas. After that, press ENTER key to set the vertical position, which can be set in the same way as setting the horizontal position. After the setting, press ENTER key to proceed to the SIZE setting.

*HINT: When positioning the window, align the top left corner of to the desired window position's top left corner, as the SIZE Setting references this corner.

ENTER key

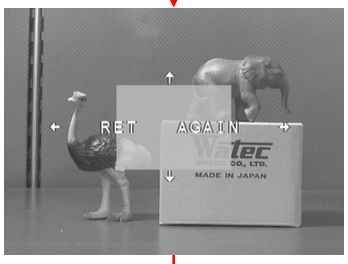


When pressing ENTER key on AGAIN, returning to POSITION Setting.

(2)SIZE Setting

The size of the effective detection area can be adjusted. Use UP&RIGHT/DOWN&LEFT key to adjust the horizontal size. After the adjustment, press ENTER key. Use the same key to adjust the vertical size. When finishing the size adjustment, press ENTER key.

ENTER key



(3))RET/AGAIN Setting

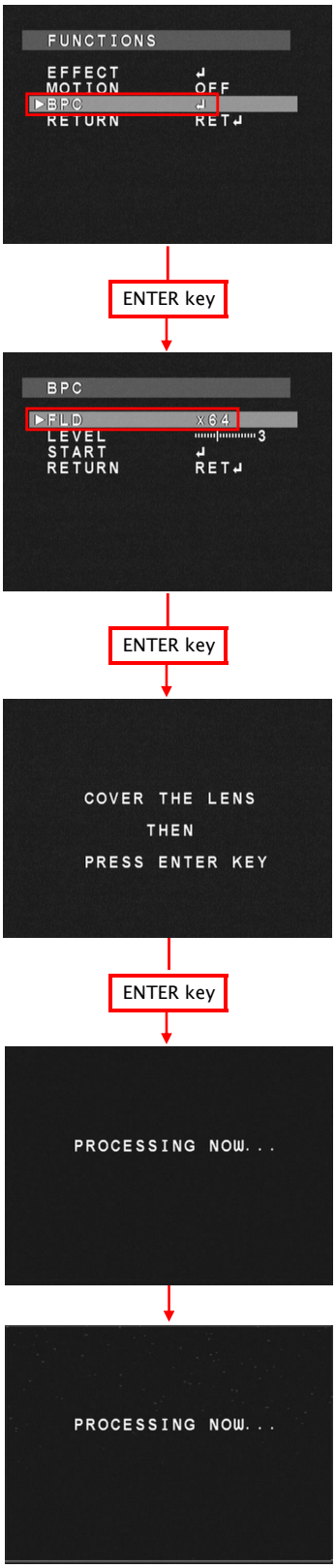
Use UP&RIGHT/DOWN&LEFT key to select RET/AGAIN.

When pressing ENTER key on RET, returning to FUNCTIONS Menu.

3.5.3 BPC (Blemish Pixel Compensation)

This section explains blemished pixel compensation function.
The default setting of the slow shutter speed is x64, and the default level is 3.

The procedure of compensation is as follows.



(1) Select BPC on FUNCTIONS menu and push ENTER key.
BPC menu will be displayed.

(2) Set conditions for detecting blemished pixels.

BPC Mode	Details
FLD	Set slow shutter speed at the time of blemished pixel detection (unit in fields). Smaller white pixels can be detected with higher field counts, however, care must be taken not to exceed the maximum compensations points of 64 points. The slow shutter speed can be selected from; x4/x8/x16/ x32/x64. *Recommending value: 64 fields Use LEFT/RIGHT key to select slow shutter speed.
LEVEL	White pixel detection is done with the level difference with neighboring pixels at dark condition. The number of detected white pixels are increases when LEVEL is small, but it may cause the number of detected white pixels to exceed the maximum compensation points of 64 points. It ranges from 1 to 6. *Recommending value: 3(when FLD is 64 fields) Use LEFT/RIGHT key to select level.
START	Press ENTER key to start detection and compensation.
RETURN	Use LEFT/RIGHT key to show RET/END. Pressing ENTER key on RET,returns to FUNCTIONS Settings. Pressing Enter key on END, OSD menu turns off and SETUP is finished.

* Please be sure to cover the lens (or close Lens iris) before conducting the detection and compensation.

(3) White pixel detection and compensation start, and detection results are displayed.

← During detection display(PROCESSING NOW…)

* Process time is different by SHUTTER or SENS UP and FLD settings. It takes the most time to detect and compensate white pixels under the condition below.

SHUTTER is x256 or SENS UP is ON and MAX is x256, and FLD is x64.

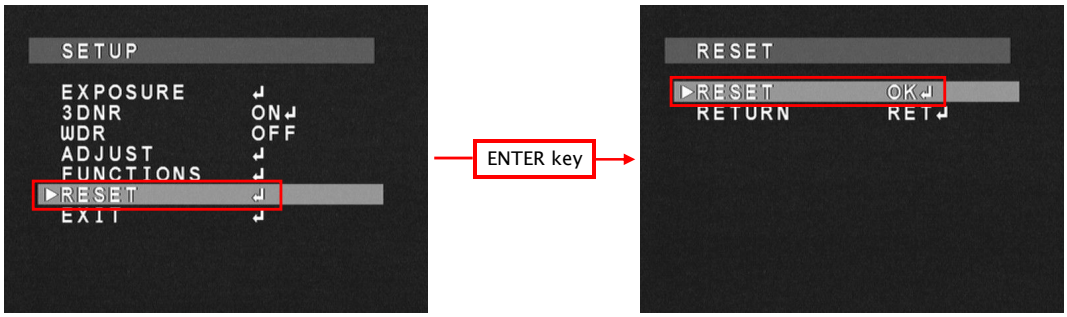
← Detection results

* Return to the BPC menu automatically after the end of detection and compensation.

3.6 RESET　MENU

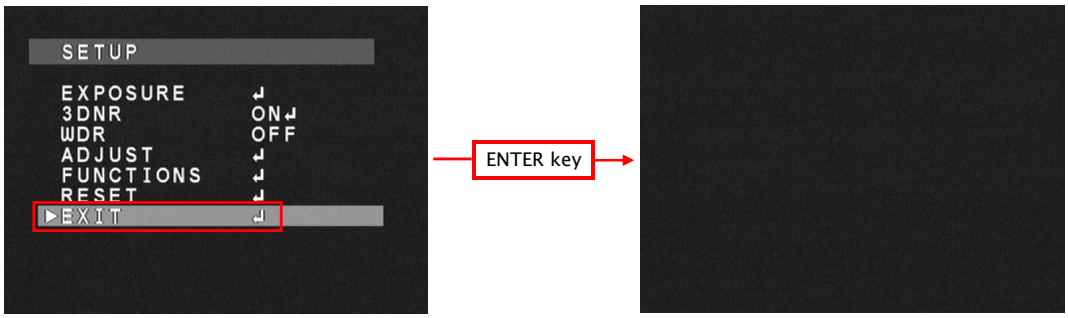
Select RESET and press ENTER key, and RESET menu is displayed.

Pressing ENTER key on OK in RESET menu will return the camera settings to the original factory settings.



3.7 EXIT　MENU

Select EXIT and press ENTER key, and OSD menu will be closed.

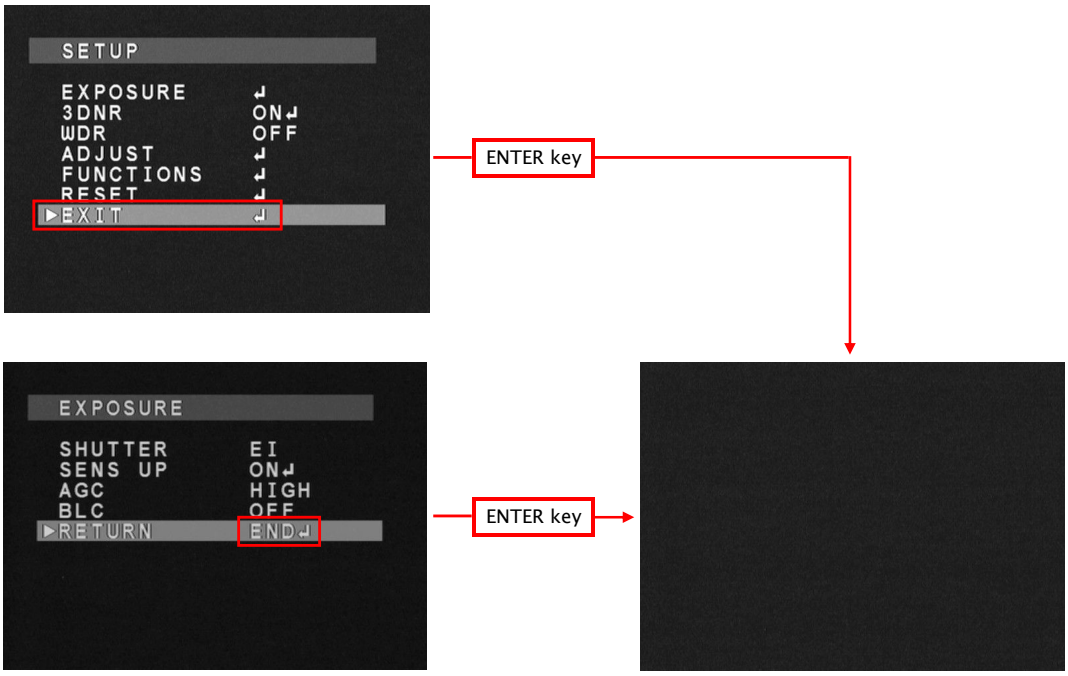


4. Save settings

All settings are saved when executing below.

When pressing ENTER key on EXIT in the SET UP Menu, or on END in all Sub Menus.

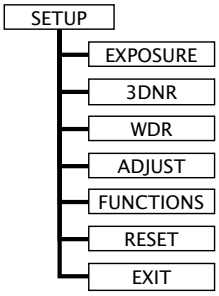
Saved settings are kept even after the camera is powered off.



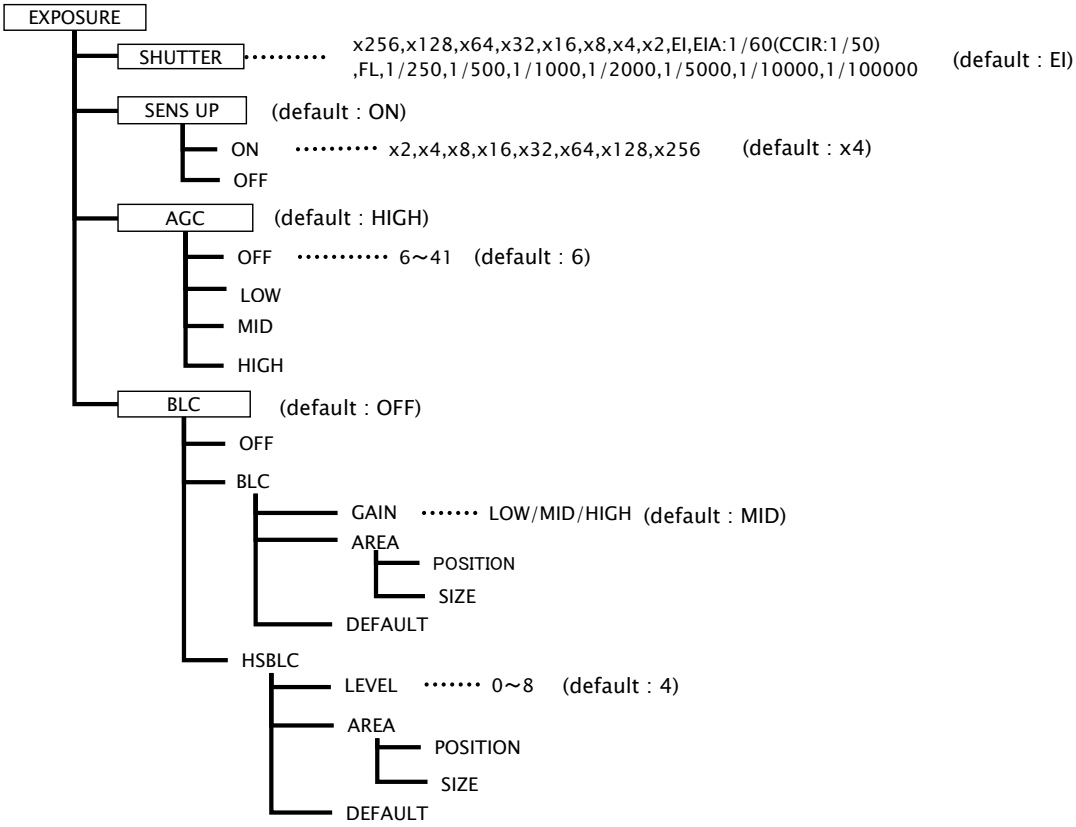
* OSD menu will be closed.

5.OSD Menu Tree

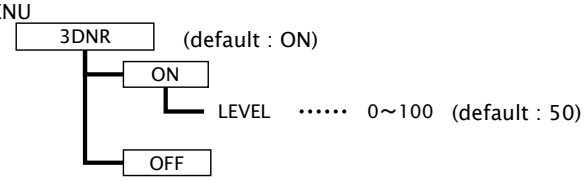
·SETUP MENU



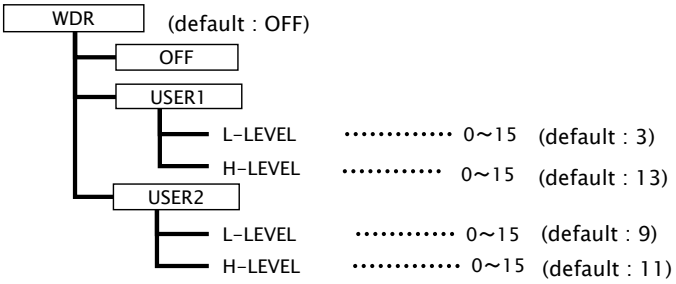
·EXPOSURE MENU



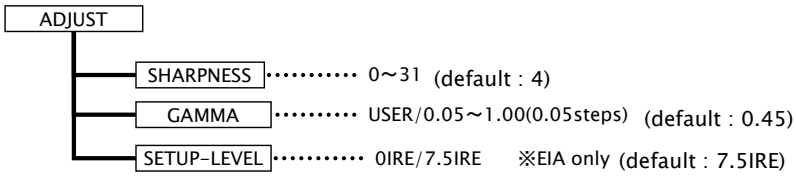
・3DNR MENU



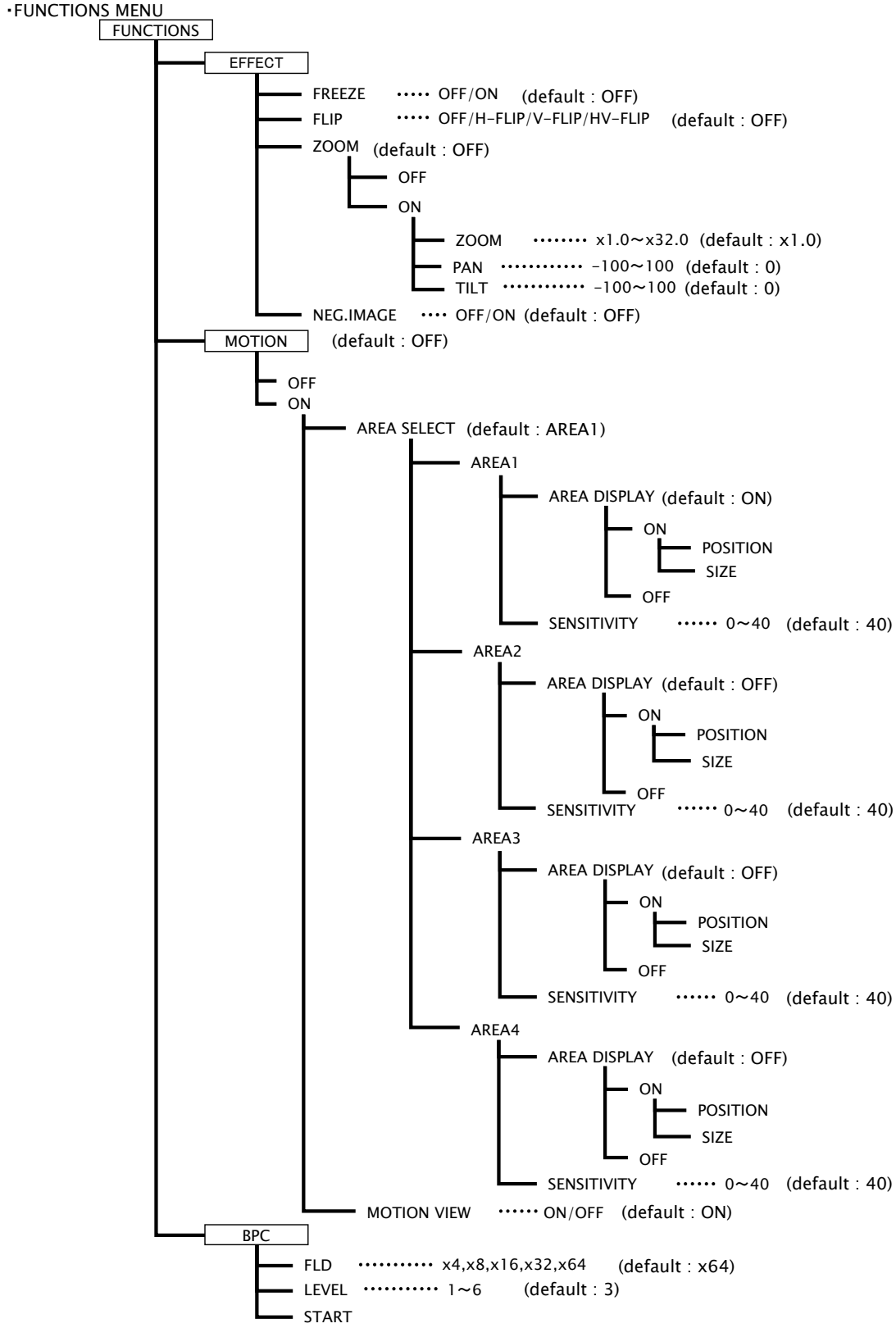
・WDR MENU



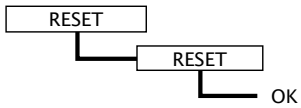
・ADJUST MENU



・FUNCTIONS MENU



・RESET MENU



・EXIT